

PIC32 Micro-Blox

PIC32 Micro-Blox is an evaluation board featuring a 32-bit MCU from Microchip's recently released PIC32MX7 product family with an Actel ProASIC3 FPGA providing additional LCD drive support. This PIC32 Micro-Blox may be used as an independent board or as part of a system using Future Electronics' Longbow baseboard to enhance functionality, I/O capability and communication interfaces. The Micro-Blox interface on the PIC32 Micro-Blox allows board-to-ribbon connection to user systems or board-to-board connection to the Longbow baseboard.

The PIC32MX795F512L on the board has a MIPS32® M4K™ 32-bit core with 5-stage pipeline, capable of 80MHz, 1.5DMIPs/MHz performance. The MCU also features up to 512KB Flash memory, up to 128KB SRAM, 10/100Mbps Ethernet MAC, USB2.0/ OTG controller, CAN 2.0B module, amongst other capabilities. The PIC32 MX7 device chosen has capability which covers the full range of PIC32MX5/6/7 family products.

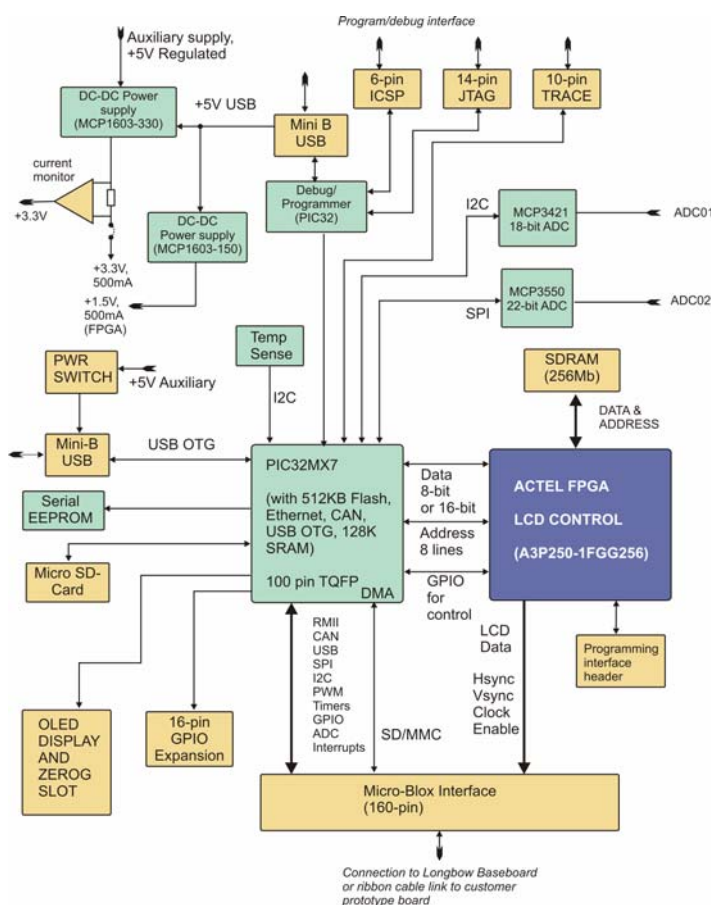
As the demand for embedded connectivity grows, the requirement for MCUs to run multiple software stacks simultaneously becomes more important. The PIC32MX5/6/7 families are designed for such data-intensive applications. Designers have access to up to 128KB of RAM for simultaneous use with Ethernet, USB and CAN. The integrated Ethernet, CAN and USB modules have built-in DMA to maximise data throughput.

The Actel ProASIC3 FPGA provided on PIC32 Micro-Blox is A3P2501FGG256 with 25,000 gates in a 256 BGA package. The FPGA interfaces with the 16-bit parallel port on the PIC32MX7 and is programmed to provide data flow management, external memory interface and LCD controller functionality to support LCD TFT drive capability for the PIC32MX7.

The ProASIC3 series of FPGAs offers a breakthrough in power, price, performance, density and features for today's most demanding high-volume applications. The ProASIC3 family is based on non-volatile flash technology and supports gate counts ranging from 10,000 up to 3,000,000 and I/O counts up to 620.

PIC32 Micro-Blox features:-

- PIC32MX795512L
- LCD controller (Actel FPGA)
- SDR DRAM (16M x 16)
- 18-bit MCP3421 I2C ADC
- 22-bit MCP3550 SPI ADC
- Embedded debug/program circuit with USB interface
- MCP9801 I2C temp sensor
- USB OTG port
- Serial EEPROM
- DC-DC converter for +3.3V and +1.5V rails – sourced from either Longbow +5V supply, external auxiliary +5V supply or USB +5V supply.
- Current monitors for +3.3V rail to PIC32MX7
- 160-pin Micro-Blox interface
- 16-pin GPIO interface
- OLED display port (TODM0028)
- Micro-SD card slot
- 4 user LED/switches
- ZEROG WiFi Module interface



Tools Provided

The PIC32 Micro-Blox is configured with circuitry to enable programming and debugging using Microchip's suite of free development tools (MPLAB IDE version 8.0 or higher). With MPLAB IDE installed on a user's PC the complete design flow, including hardware programming onto the target device can be completed with a single USB connection to the Micro-Blox.

A full Board Support Package is available with the release with the following drivers, stacks, example code and tools configured to operate within the FreeRTOS open source environment.

- Stacks: TCP/IP; USB Device/ Host
- Libraries: Encryption (AES128/ 196 / 256); Microchip framebuffer and graphics library; CAN; Audio; DSP; FATfs files system; 16-bit file system & 32-bit file system
- Bootloader: Serial Port Bootloader

Added functionality in combination with Longbow baseboard

The combined Longbow and PIC32 Micro-Blox package can support the following additional features:-

- RS-232 ; IrDA ; RS-485 ; USB-to-UART interface
- CAN2.0B
- Additional USB2.0 Host and OTG ports
- Status LEDs and power LEDs
- 20x2 interface for Bluetooth and WiLAN modules (including ZeroG WiFi modules).
- 20x2 header supporting ZigBee wireless modules
- SD memory card interface
- Interface for 16x2 alphanumeric LCD
- Small Buzzer for tone audio feedback
- Ethernet port supporting 10/100BASE-T/TX with precision time stamping for IEEE1588 applications (DP83640TVV from National Semiconductor)
- 160 position Futureblox Rev 2.3 board-to-board interface
- I2S Audio Codec and Class D audio amp (UDA1344 and SA58670BS-G from NXP)
- Direct interface to a selection of TFT LCDs:

| Part Number | Size | Manufacturer |
|------------------|---|--------------|
| TFT320240-95-E | 3.5" QVGA with integrated touch screen | Truly |
| TFT480272-12-E | 3.5" QVGA (24-bit) with integrated touch screen | Truly |
| TFT640480-8-E | 5.8" VGA (24-bit) with integrated touch screen | Truly |
| NL2432HC22-41K | 3.5" QVGA with integrated touchscreen | NEC |
| NL8060BC21-03 | 8.4" SVGA | NEC |
| NL6448BC33-63D/C | 10.1" VGA | NEC |
| NL8060BC31-41D | 12.1" SVGA | NEC |
| NL10276BC24-13 | 12.1" XGA | NEC |

- Serdes support for LCD connection using National Semiconductor DS90UR124IVS serialiser
- LCD Touchscreen control (LM8300 from National Semiconductor)

Ordering Information

Part Numbers: PIC32-MICRO-BLOX

Register for your free board through
www.my-boardclub.com